

# The Integument System

# The Skin

- Largest organ of the body
- Functions of this body system are:
  - Protection
  - Temperature regulation
  - Vitamin D production
  - Sensation
  - Excretion

# Protection

- Protects deeper tissue from drying
- Protects from environment
- Protects from organism invasion

# Temperature Regulation

- Attempts to maintain a constant body temperature
  - Evaporation
  - Radiation
  - Convection

# Vitamin D production

- Synthesis vitamin D
- Manufactured in the skin when activated by UV rays in sunlight
- Enzymes in liver and kidneys also aid in production

# Sensation

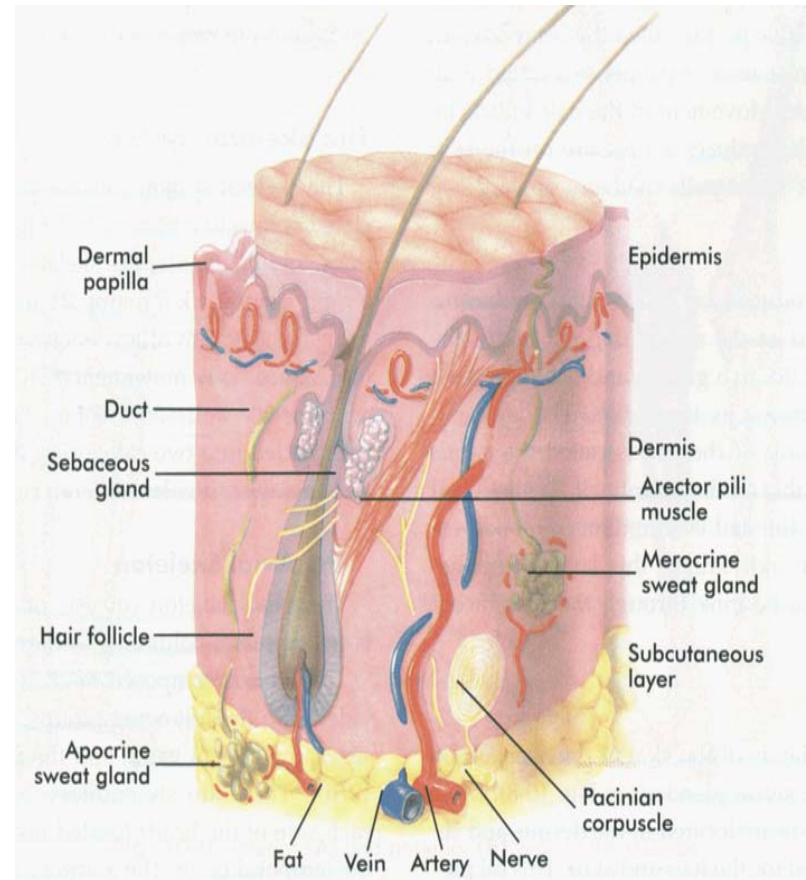
- Nerve ending sensitive to
  - Pressure
  - Pain
  - Touch
  - Temperature
- Located mainly in Dermis

# Excretion/Absorption

- Minimal amounts
- Can absorb some ointments, chemical etc.
- Can excrete water and mineral salts

# Layers of Skin

- Epidermis
  - layer of epithelial tissue that rests on the dermis
- Dermis
  - layer of dense connective tissue
- Hypodermis
  - loose connective tissue anchors dermis to muscle





# Epidermis

- Epithelial cells
  - stratified squamous epithelium in deepest layers
- Mitosis
  - epithelial cells reproduce constantly through mitosis
  - pushing up newer cells as old ones are sloughed

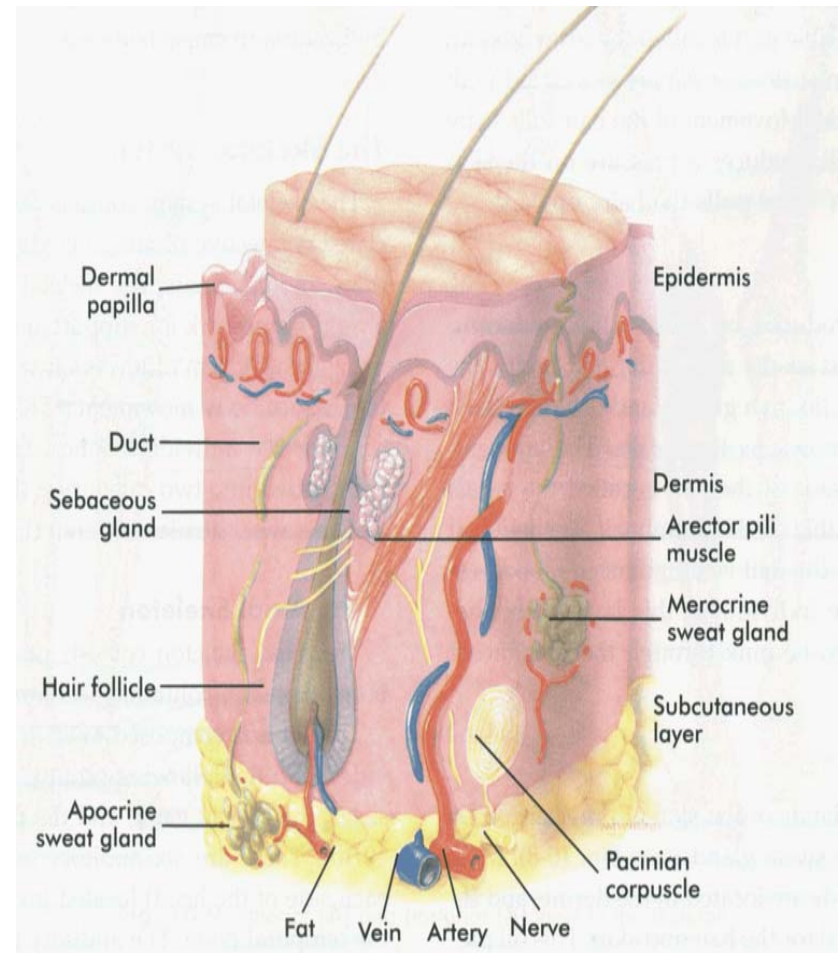
- keratinization process of cells filling with the protein ***keratin*** as they move upwards.
- During keratinization cells die and produce and outer layer which resist abrasions and forms a permeability barrier (waterproofs).

# Dermis

- dense connective tissue
- collagen and elastic fibers are responsible for most structural strength
  - produces cleavage or tension lines-an incision made across a cleavage line will likely gap causing a considerable scar.

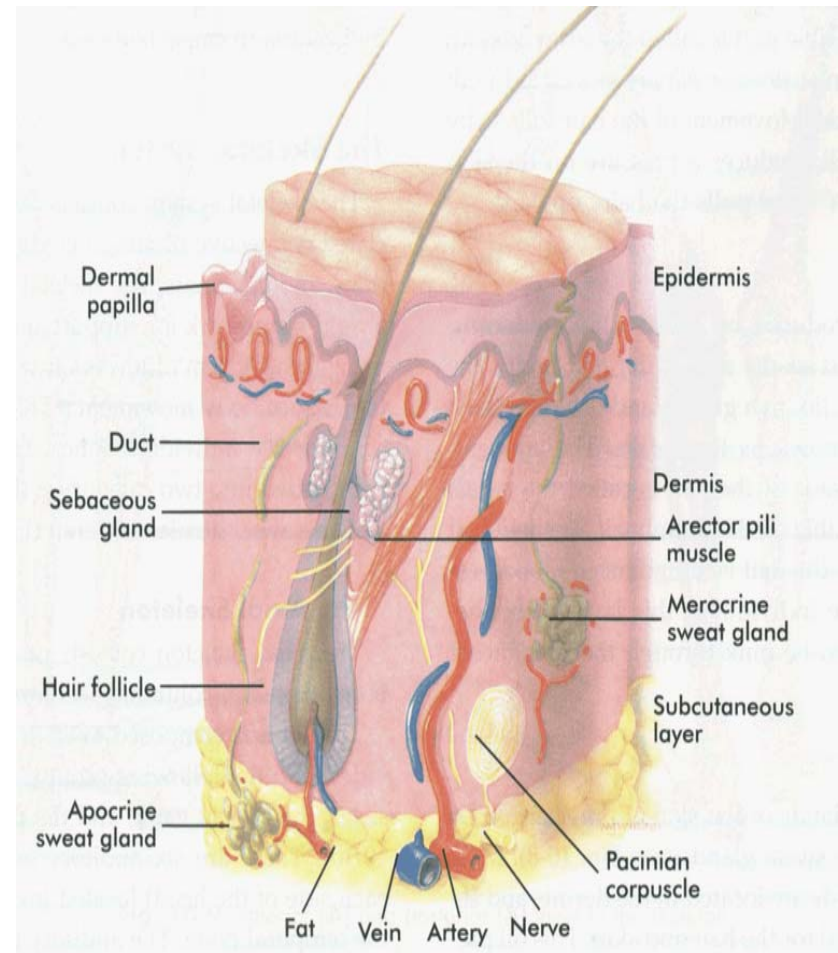
# Structures of the Dermis

- sebaceous glands
- sudoriferous glands
- arrector pili muscle
- hair follicle/bulb
- blood vessels



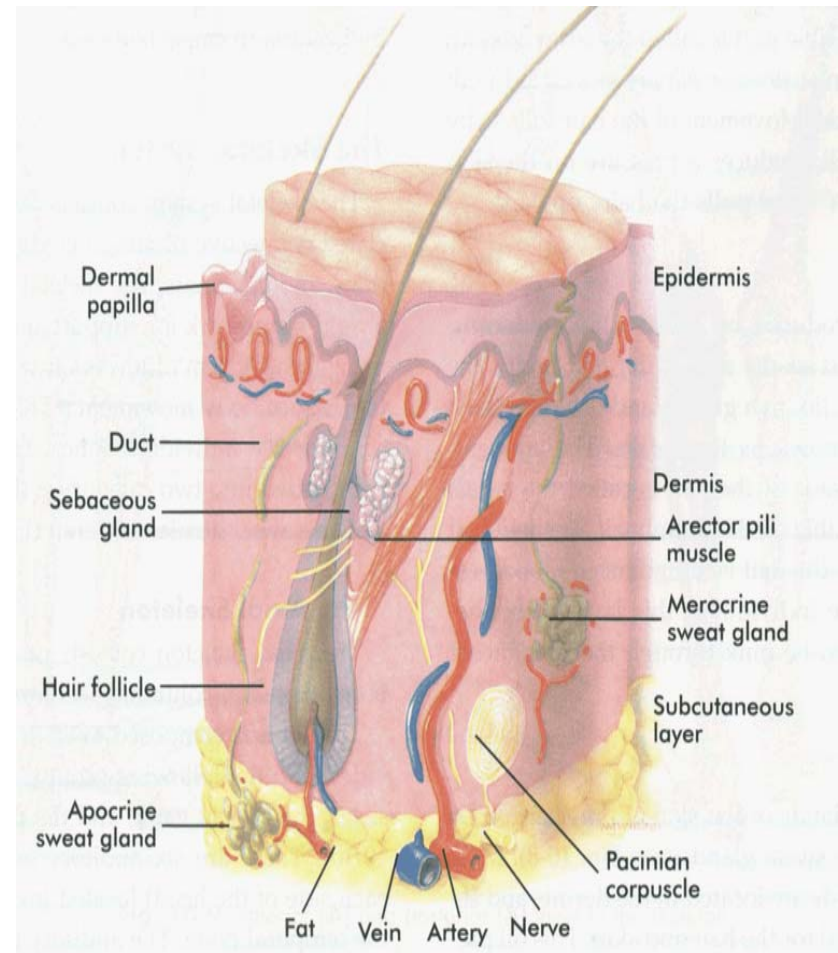
# Sebaceous glands function

- secrete oil for hair & skin
- found only where hair grows
- oil (sebum) protects against some bacteria & prevents drying



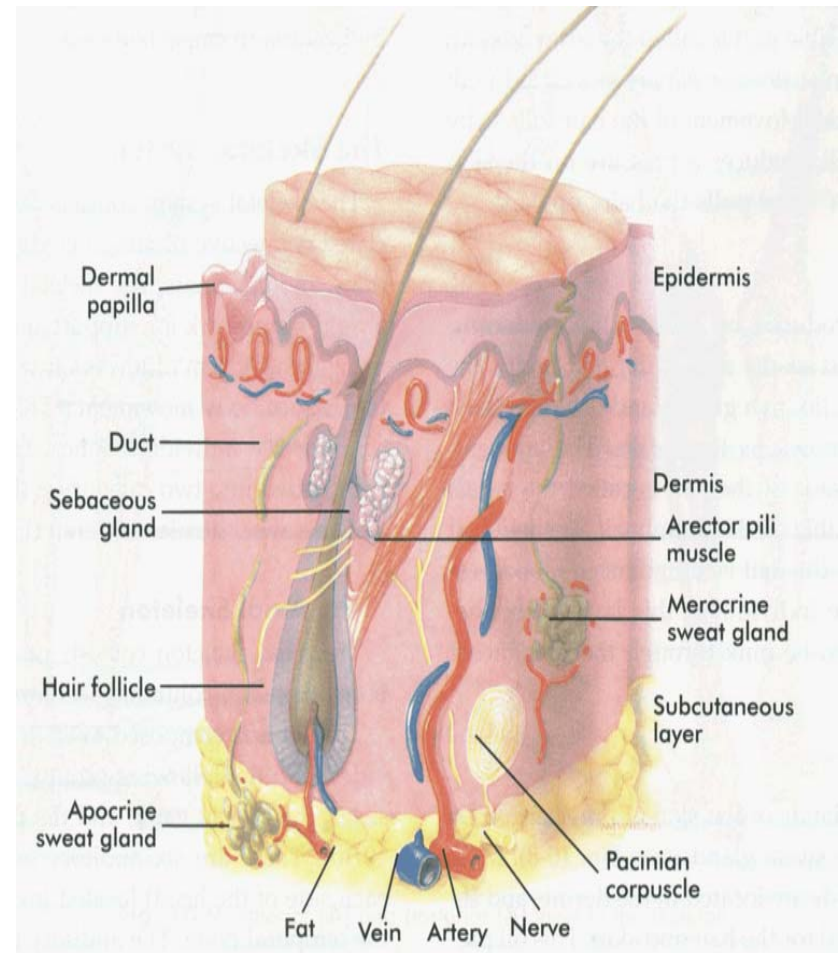
# Sudoriferous (sweat) glands function

- 2 groups Eccrine & apocrine
  - Eccrine produce transparent, watery liquid called perspiration
  - sweat rid body of ammonia & uric acid.
  - Helps body maintain a constant temperature



# Sweat glands continued

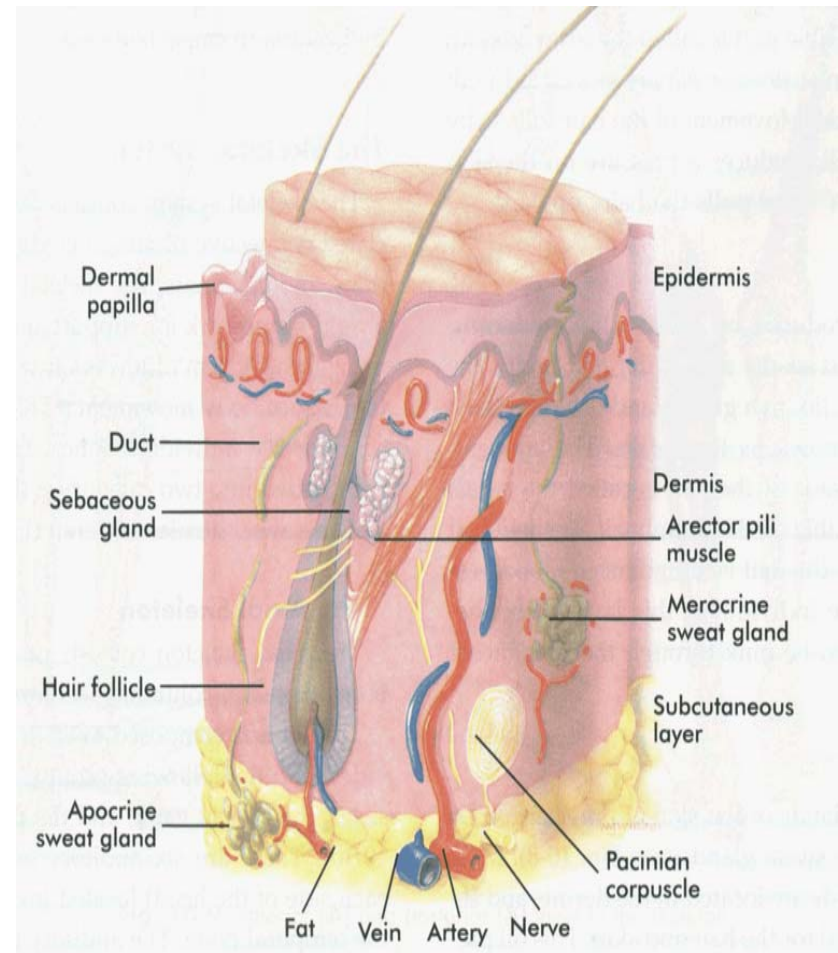
- **Aprocrine**
  - found in axilla (armpit) & around genitals
  - produce a thick milky secretion
  - odor caused by skin bacteria
  - enlarge & begin to function at puberty.





# Arrector Pili Muscle function

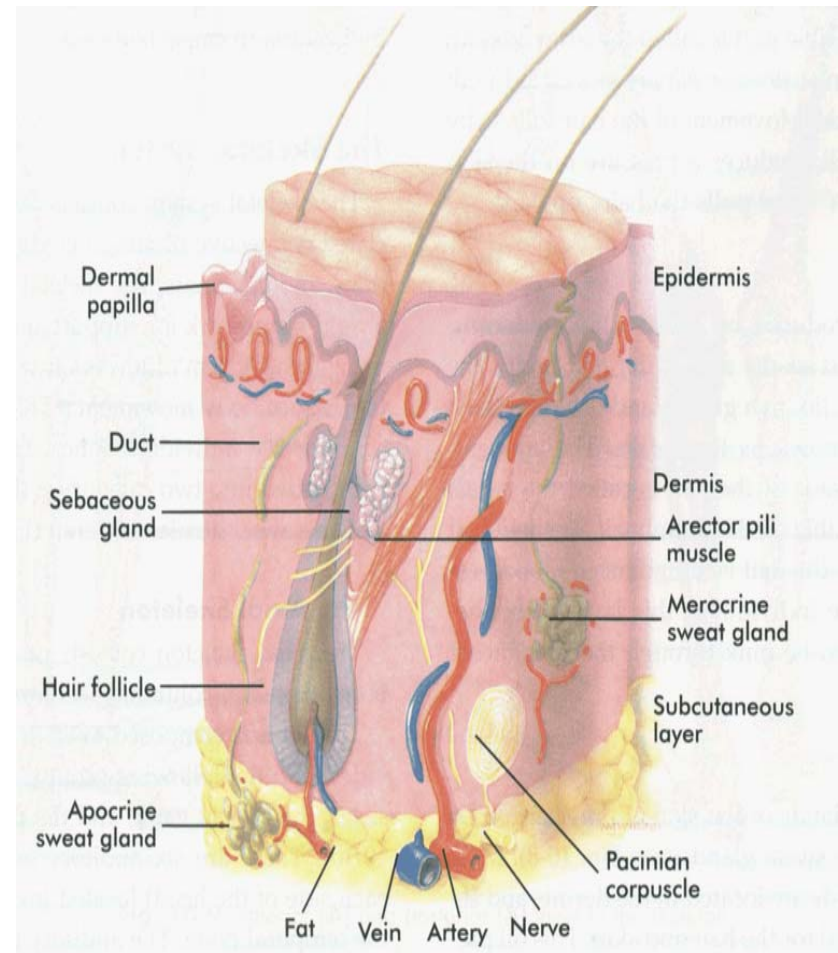
- contracts causing hair to become erect
- “goose pimples”
- thought to be a warming response





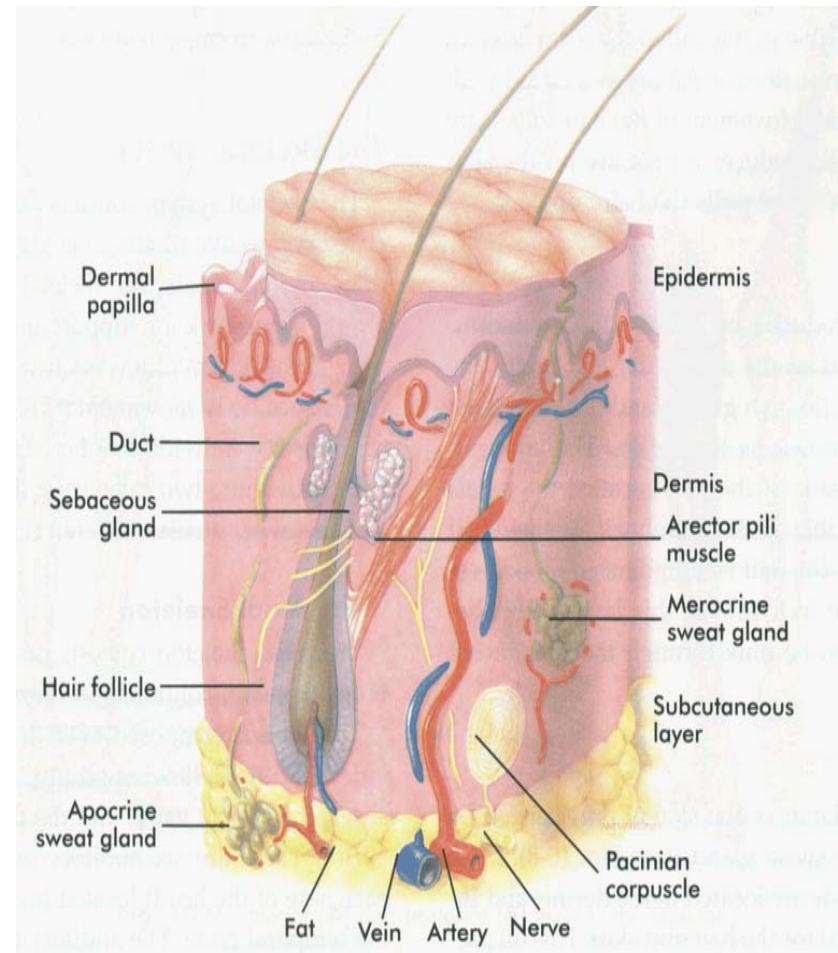
# Hair Follicle

- contains hair shaft
- hair papilla is where root of hair is nourished and grown
- Nails protective; hard keratin



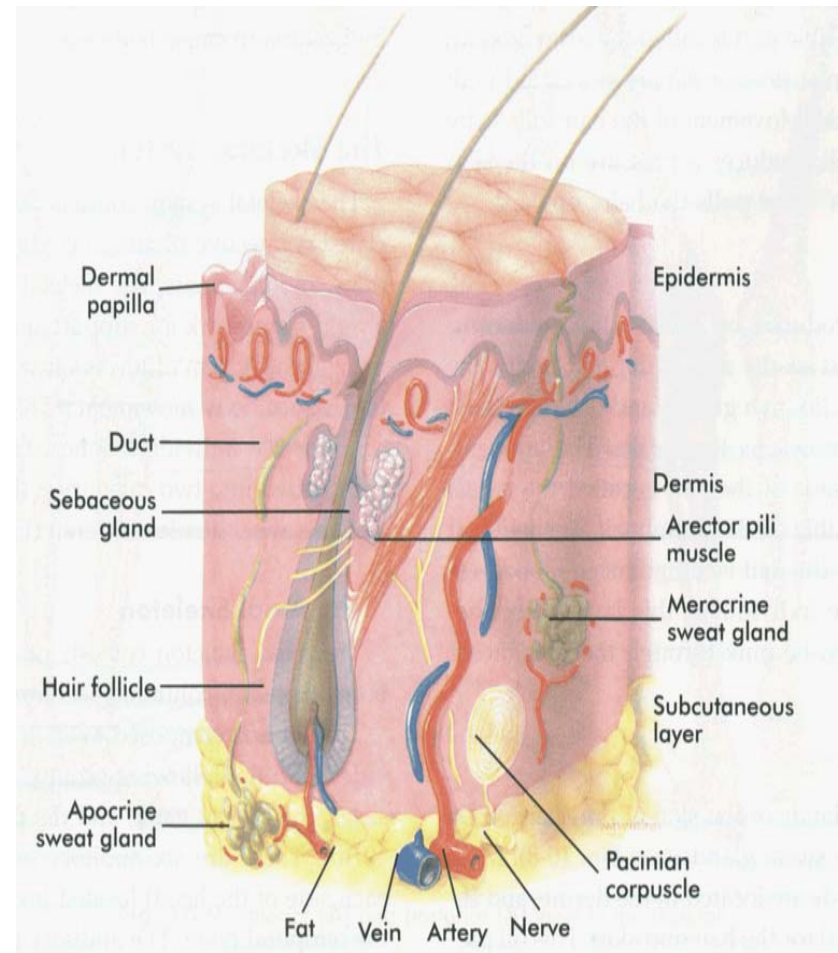
# Blood vessels function

- supply nourishment to the skin & removes waste products
- aids in temperature regulation



# Hypodermis

- loose connective tissue
- shock absorber
- insulates from temperature extremes
- not TRUE layer of skin



# Pigment

- Melanin
  - Main pigment
  - Common to all races
  - Darker you are more you have
  - Helps protect against UV radiation

# Effect of Aging

- Wrinkles
  - Loss of fat and collagen
  - Dermis thins
  - Parchment skin
- Hair loss
  - Slower in replacing self
  - Graying
- Sweat glands decrease
  - Less output of perspiration
- Nails
  - Flake, become brittle, develop ridges
  - Toenails thicken/yellow

# Care of Skin

- Proper nutrition
- Adequate circulation
- Cleansing
- Hand washing
- Sun/Environment Protection